

REMARKS/ARGUMENTS

Claim Status

Claims 1-31 are pending. Claims 1-15 and 18-31 stand rejected. Claims 16 and 17 stand objected to as allowable if rewritten in independent form. Applicant appreciates the examiner's indication of allowable subject matter. Applicant maintains the patentability of claims 1-15 and 18-31 and respectfully requests reconsideration and withdrawal of the rejections and objections to claims 1-31.

Examiner Interview

Applicant appreciates the examiner interview conducted on September 23, 2003. While no agreement was reached, applicant submitted that neither cited reference discloses *execution by interpretation* or an *intermediate instruction set* that is optimized for execution by interpretation on host computer.

Claim Rejections - 35 U.S.C. § 102(e)

Claim 1 stands rejected under 35 U.S.C. § 102(e) as being unpatentable over Souloglou et al., (U.S. Patent Publication No. 2002/0100030 A1) (hereinafter "Souloglou"). The applicant respectfully traverses this rejection.

The applicant's invention takes a novel approach to emulation that overcomes the shortcomings of conventional emulation. According to the invention, the target program to be emulated is first statically translated to a series of instructions of an intermediate instruction set. The intermediate instruction set is an instruction set that is optimized for interpretation on the host computer. It is not the native instruction set of either the program's host or the target host computer. The series of instructions is then executed by interpretation on the host computer. Because, the intermediate instruction set is an instruction set that is optimized for interpretation on the host computer, the execution of the series of instructions by interpretation is generally faster than conventional interpretation.

The invention, as recited in claim 1, includes features that are not disclosed or suggested by the cited reference, namely:

1. A method for emulating the execution of a target program comprising instructions of an instruction set of a target on a host computer having a different instruction set, said method comprising:

performing a static translation of the instructions of the target program into a series of instructions of an intermediate instruction set, the intermediate instruction set being optimized for interpretation on the host computer; and

executing the series of instructions of the intermediate instruction set by interpretation on the host computer. (emphasis added)

Souloglou does not disclose or suggest the invention as claimed. Souloglou only discloses *static translation* as the second step in 'running' a program (p. 1, par. 5, ll. 13-15). That is, Souloglou is directed to code conversion, not to emulation. It describes a process for code conversion itself. It does not describe a process for executing, via an interpreter, intermediate code on a host machine different from the original machine for which the code was first written. Therefore, Souloglou does not disclose *executing instructions by interpretation*, as recited by the claim.

Further, the use of Souloglou as a 102 reference is suspect because one must go back to the first provisional application or the foreign reference to predate the filing of the instant application. Accordingly, the applicant reserves the right to argue that Souloglou is improper prior art; however, it appears to be so clearly inadequate to support the rejection that distinction from the reference appears to be the best way to oppose it.

Finally it should be noted that the paragraph referenced in the rejection from the Souloglou reference describes not the Souloglou invention, but the Flashport system of AT&T, which Souloglou describes as "conventional," taking anything up to several months to accomplish and resulting in code "which is able to run on a processor of the desired type." Again, it is noted that the claim recites execution by interpretation, which does not mean to the person of ordinary skill in this art that it "is able to run on a processor of the desired type" without more. Interpreters themselves are old in the art and used to supplement the capabilities of systems, and use of them is not equivalent to simply running on the processor.

Accordingly, applicant submits that claim 1 is patentable over the cited reference. For the foregoing reasons, applicant respectfully requests reconsideration and withdrawal of the section 102(e) rejection of claim 1.

Claim Rejections - 35 U.S.C. § 103(a)

Claims 1-15 and 18-31 also stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Souloglou in view of Horwat (U.S. Patent No. 6,021,275) (hereinafter "Horwat"). The applicant respectfully traverses this rejection.

Horwat does not cure the deficiencies of Souloglou. Horwat is directed to translating program code so that it may be executed on another machine having a different architecture. More particularly, Horwat focuses on only one aspect of such translation, namely endian-format translation that provides endian-independent representations of data, pointer data, operands, and pointer operands. Some machines may be big-endian and other machines may be little-endian. Big-endian format maps the lowest address to the highest order data byte and little-endian format maps the lowest address to the lowest order data byte. When translating between machines having different endian formats, bytes of each instruction or each piece of data are reordered for the architecture of the second machine. Horwat discloses such reordering of bytes. Because Horwat fails to provide the missing elements to support a proper rejection of the base claims, an argument regarding the meaning of optimization in the applicant's claims is not warranted.

Horwat only discloses *translation* as the second step in running a program (Fig. 2). Horwat does not disclose *executing instructions by interpretation*. On the contrary, Horwat notes that Intercode object code is provided and therefore the object code can be run with an Intercode *translator* (c. 8, ll. 4-14). Translation, however, is very different from interpretation, as *acknowledged in the background of Horwat* (c. 1, ll. 22-49). Therefore, Horwat does not disclose or suggest *executing instructions by interpretation*, as recited by the claims.

The Examiner also refers to claim 9, for example as being met by the same features of Souloglou as in claim 1. It is noted that claim 9 is an apparatus claim which specifically names the interpreter as a limitation. As neither Souloglou (nor the Flashport system which is referred to therein) have an interpreter, this element is also not seen in the cited reference.

Thus, neither reference, either alone or in combination, teaches or suggests performing static translation of a program on one machine into a series of instructions of an intermediate instruction set, followed by *execution by interpretation of the series of instructions of that intermediate instruction set on a host computer*, as recited in independent

DOCKET NO.: TN137/USYS-0111
Application No.: 09/294,617
Office Action Dated: August 15, 2003

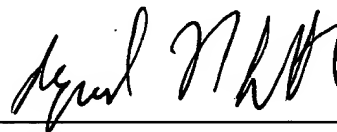
PATENT

claims 1, 9, 19, and 27. Inasmuch as claims 2-8, 10-18, 20-26, and 28-31 depend from one of claims 1, 9, 19, and 27, these claims are patentable at least by their dependency. For the foregoing reasons, applicants respectfully request reconsideration and withdrawal of the section 103(a) rejection of claims 1-15 and 18-31 and the objections to claims 16 and 17.

Conclusion

For the foregoing reasons, applicants respectfully submit that all of the claims of the present application patentably define over the cited references of record, alone or in combination. Reconsideration of the office action and an early notice of allowance are respectfully requested. In the event that the examiner cannot allow the present application for any reason, the examiner is encouraged to contact the undersigned attorney, Raymond N. Scott Jr. at (215) 564-8951, to discuss resolution of any remaining issues.

Date: October 14, 2003



Raymond N. Scott, Jr.
Attorney for Applicant
Registration No. 48,666

Woodcock Washburn LLP
One Liberty Place - 46th Floor
Philadelphia PA 19103
Telephone: (215) 568-3100
Facsimile: (215) 568-3439

C:\NrPortbl\WWKMNO1\LSHATZ\216747_5.doc